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(12) **UK Patent Application** (19) **GB** (11) **2 182 649** (13) **A**
 (43) Application published 20 May 1987

(21) Application No 8624223

(22) Date of filing 9 Oct 1986

(30) Priority data

(31) 40120

(32) 7 Nov 1985

(33) IT

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(51) INT CL⁴

B65D 51/18 // 41/26

(52) Domestic classification (Edition I)

B8T 13A HSC

(56) Documents cited

None

(58) Field of search

B8T

Selected US specifications from IPC sub-class B65D

(54) **A combined bottle cap and cup
 incorporating a childproof safety
 feature**

(57) A bottle 1 closed by a screw cap 3 comprises an outer cap 4 which can be used as a cup. The cap 4 is freely rotatable with respect to the cap 3. The caps have cooperating projections and recesses 5-8 such that the cap 4 can only be withdrawn when rotated to one angular position.

Fig. 1

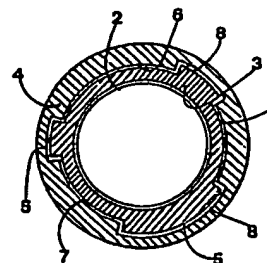
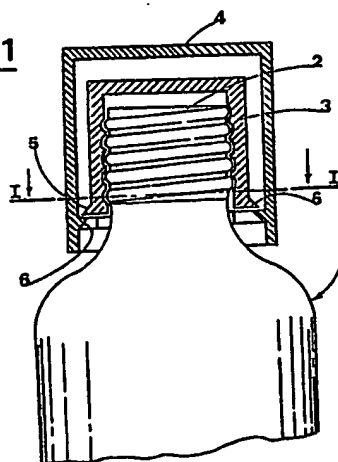
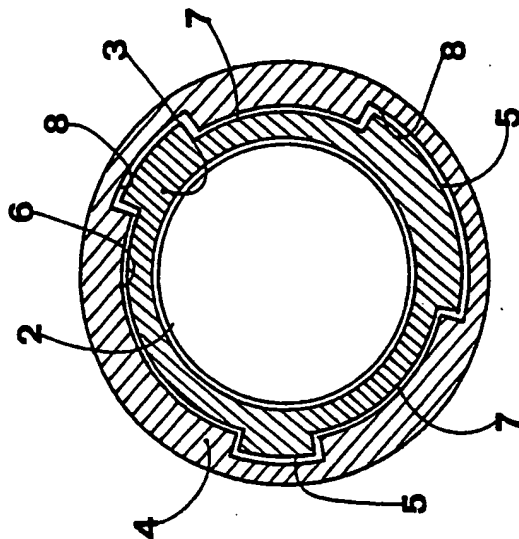
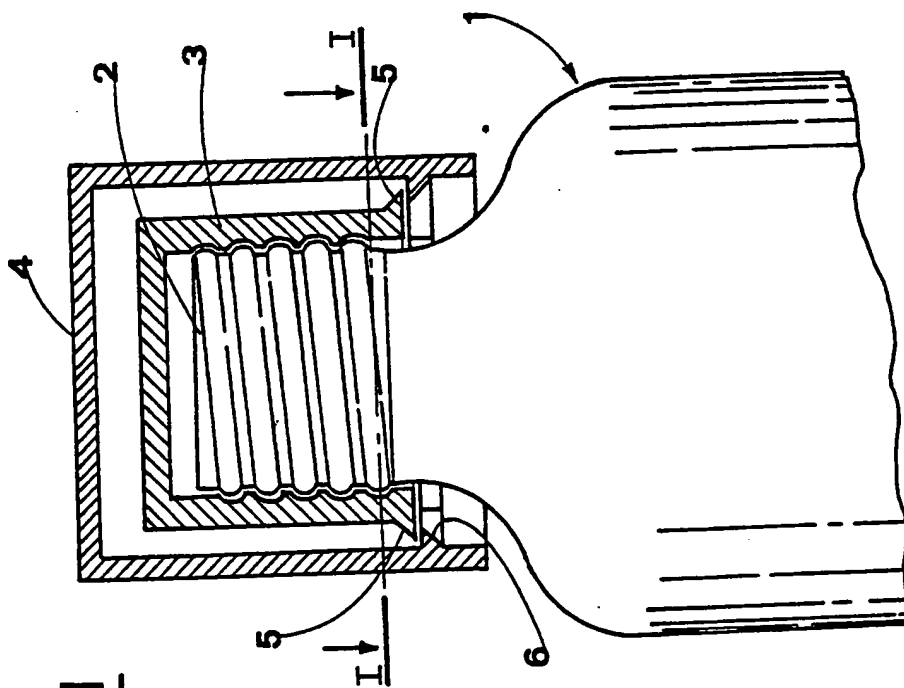


Fig. 2

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SPECIFICATION

A combined bottle cap and cup incorporating a child-proof safety feature

5 The invention disclosed relates to a combined bottle cap and drinking or measuring cup incorporating a childproof safety feature.

The prior art embraces measuring cups packaged together with bottles which, in the greater number of instances, will contain liquids. Similarly, the art embraces measuring cups designed to fit over the cap of the bottle when upturned, to the end of occupying as little space as possible. The fit in question is achieved by applying a given force such as obliges the cap to slot into the measuring cup, assuming a position coaxial thereto; the measuring cup thus remains attached to the outer surface/s of the cap by virtue of the interference created, but can easily be removed by imparting an axial force sufficient to produce separation of the two components.

The overriding object of the invention disclosed is that of providing a cap embodied in such a way that it will both serve as a drinking or measuring cup, and function as an outer cap incorporating a childproof safety feature.

Advantages gained with a childproof cap according to the invention are structural simplicity, and flexibility of application, inasmuch as the cap is easily embodied whatever the particular type of packaging adopted in manufacture.

The stated object and advantages, and other advantages besides, are realized with the childproof type of combined bottle cap and cup according to the invention, which is characterized in that it comprises an outer cap that functions additionally as a cup and accommodates a coaxially disposed inner cap provided with conventional means by which it may be fitted to and removed from the bottle; in that the outer cap, or cup, is freely and coaxially rotatable about the inner cap; and in that it comprises means which, with the one cap fitted over the other, will inhibit relative axial shift such that no separation occurs even when either cap is rotated, and permit separation through the axial direction only when the outer cap assumes a given angular position in relation to the inner cap.

The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

50 *Figure 1* shows the longitudinal section taken through a median plane of the combined cap and cup;

Figure 2 is the section through I-I in *Figure 1*.

With reference to the drawings, 1 denotes a bottle the neck 2 of which is surrounded by a cap 3 that closes off the mouth. The cap 3 is of a conventional screw type having an internal thread that matches an external thread offered by the endmost part of the neck 2, adjacent to the mouth.

60 4 denotes an outer cap fitted over the screw cap 3, which can be used as a drinking or measuring cup once separated from the screw cap. The outer cap 4 is disposed coaxially with the screw cap 3, and of dimensions such that its hollow interior accommodates the inner screw cap 3 totally.

The outer cap 4 is restrained axially in relation to the inner cap 3, but remains freely rotatable with respect thereto, turning about the common axis of both caps. The axial restraint is provided by a set of radial

70 projections 6 issuing from the internal cylindrical surface of the outer cap 4 and forming a broken ring. The projections 6 are alternated with sockets 8, and are arranged and proportioned such as to engage frontally to an exact fit in corresponding sockets 7 offered by the external cylindrical surface of the screw cap 3, the sockets 7 of the inner cap alternating similarly with radial projections 5, which in this instance form an externally-orientated broken ring.

As *Figure 2* amply demonstrates, the projections 6 of the outer cap 4 are proportioned such as to engage frontally in the matching sockets 7 offered by the inner screw cap 3, whilst the projections 5 issuing from the inner cap are proportioned such as to engage frontally in the sockets 8 offered by the outer cap 4. What is more, the single radial projections 6 and their matching sockets 7 will be seen to exhibit dissimilar circumferential length from pair to pair, signifying that location of the one in the other is made possible only when the outer cap 4 is made to assume a given angular position with respect to the inner cap 3 - i.e. the position shown in *Figure 2*, which permits separation of the two caps 3 and 4.

Any relative angular position of the caps other than that of *Figure 2* will disallow location of the radial projections 6 of the one cap 4 in the sockets 7 of the other cap 3; accordingly, with the one cap 4 accommodating the other cap 3, it will be impossible to separate the two, and in practical terms, the outer cap 4 can rotate freely about its axis without the inner cap 3 becoming unscrewed from the bottle, accidentally or otherwise.

Only when the outer cap 4 is fully separated from the inner cap 3 can the bottle be opened by unscrewing the latter. Once separated, the outer cap 4 can be utilized as a drinking or measuring cup.

When closing the bottle, the screw cap 3 is fastened to the neck of the bottle, whereupon the outer cap 4 is fitted over the screw cap. The fit can be brought about by aligning the radial projections 6 so as to locate in their corresponding sockets 7, and pushing the outer cap home through the axial direction; this accomplished, rotation of the outer cap will move the radial projections 6 out of alignment with their relative sockets 7.

115 A simpler method of fitting the outer cap 4 would be to force it axially over the screw cap 3, ignoring the alignment procedure described above. In this instance, the radial projections 6 and 5 of the relative caps 4 and 3 will be fashioned with an angled surface at one side (see *Figure 1*) in order to exploit the flexible characteristics of the material used in embodiment and permit of obtaining a snap fit in the one direction only.

125 The invention admits of a variety of embodiments of the childproof fit used to connect the bottle cap 3 proper with the outer, dual-purpose cap-or-cup 4. To render separation particularly difficult, the fit might feature a number of sets of radial projections 6 and/or 5 arranged to form a like number of broken rings, offset in relation to one another and spaced apart at

given distance/s through the axial direction.

It will be appreciated by a person skilled in the art that the childproof safety fit disclosed can be integrated into any given type of concealed cap, including the type provided with a conventional break-open seal, since all that is required is a perfectly simple design change in the existing cap such as will enable incorporation of the radial projections and sockets.

10 CLAIMS

1. Combined bottle cap and cup incorporating a childproof safety feature, characterized:

- in that it comprises an outer cap (4) that functions additionally as a cup and accommodates a coaxially disposed inner cap (3) provided with conventional means by which it may be fitted to and removed from the bottle (1);
- in that the outer cap, or cup (4), is freely and coaxially rotatable about the inner cap (3); and
- in that it comprises means which, with the one cap (4) fitted over the other (3), will inhibit relative axial shift such that no separation occurs even when either cap is rotated, and permit separation through the axial direction only when the outer cap (4) assumes a given angular position in relation to the inner cap (3).

2. Combined cap and cup as in claim 1, wherein means which inhibit and permit separation of the two caps comprise at least one set of radial projections (6), issuing from the internal cylindrical surface of the outer cap (4) and forming a broken ring, which are alternated with sockets (8) and arranged and proportioned such as to engage frontally to an exact fit in matching sockets (7) alternated in like manner with radial projections (5) forming at least one externally-orientated broken ring issuing from the external cylindrical surface of the inner cap (3).

3. Combined cap and cup as in claim 2, wherein the radial projections (6) issuing from the outer cap and/or the radial projections (5) issuing from the inner cap (3) are embodied in flexible material and fashioned with surfaces angled in relation to the path through which the outer cap is fitted and removed, in such a way that the caps may be forced into the childproof configuration exploiting the flexibility of the material, but cannot be separated by the same expedient.

4. Combined cap and cup as in Claim 2 or Claim 3, wherein the radial projections (6) issuing from the outer cap (4) and their matching sockets (7) offered by the screw cap (3) exhibit dissimilar circumferential length from pair to pair.

5. Combined bottle cap and cup incorporating a childproof safety feature substantially as hereinbefore described with reference to the accompanying drawings.